



## Knowledge and Attitude of Nigerian Dentists to Immediate Loading of Dental Implants

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### Abstract

**Background:** Treatment with dental implants is an attractive option in the practice of restorative dentistry. Majority of patients treated with dental implants have reported remarkable improvement in function, esthetics and psychological status. Dental implant placement traditionally was advocated for healed extraction sites; however, the development of a better understanding of the biologic principles of bone healing has led to preferment of immediate implants.

**Aim:** To evaluate the knowledge and attitude of Nigerian dentists to immediate loading of dental implants.

**Materials and Methods:** Pretesting of the questionnaires was earlier carried out on 20 dentists at the Lagos University Teaching Hospital, Lagos. It was a questionnaire based cross sectional study conducted among dentists that attended Nigerian Dental Association Conference. Participants were recruited through a simple random sampling through a selection of "Yes or No". Questionnaires were given to individuals that picked the "Yes" option. Three hundred and fifty questionnaires were distributed and 250 were duly filled and returned to the researchers. Analysis of data was done using SPSS Version 20.

**Results:** Sixty five point eight percent of the participants were females and the commonest age group of the respondents was 35-39 years (30.8%). Most of the respondents (81.8%) have a minimum of 10 years clinical experience. 74.4% of respondents had knowledge of immediate loading of dental implants however, 66.2% of respondents do not place dental implants in their clinics. 74.4% of those that do, do not practise immediate loading of dental implants.

**Conclusion:** Though most dentists know about immediate loading of dental implants, only a few practise it.

**Keywords:** Knowledge, Attitude, immediate loading, dental implants.

### Introduction

A dental implant is an artificial tooth root that is placed into the jaw bone to hold a replacement tooth or bridge<sup>1</sup>. It is an artificial root that is surgically inserted into the jawbone to support a single tooth replacement, fixed partial, complete denture or maxillofacial prosthesis<sup>2</sup>.

It has become increasingly important<sup>3,4</sup> as most

patients treated with implant supported prosthesis have reported improvement in their quality of life and other psychological benefits and moreover there is conservation of the tooth structure adjacent to the teeth to be replaced<sup>5,6</sup>. Due to its high success rates and predictability, its clinical utilization is increasing rapidly<sup>7</sup>.

The high success rate of treatment with dental implants has made the treatment to be popular

amongst patients. Therefore, it is important to assess the level of knowledge of dentists with regards to dental implants and to find out if their perception of dental implants will guide patients who do not have the education or background knowledge to make an informed decision between implant supported dentures and removable dentures<sup>2,8-11</sup>. Presently, dental implants are one of the most exciting and rapidly developing aspects of dental practice.

In the past, it was advocated that after implant placement, surgical sites should be undisturbed for at least 3–6 months to allow uneventful wound healing, thereby enhancing osseointegration between the implant and bone<sup>19,20</sup>. The rationale behind this approach is that implant micro-movement caused by functional force around the bone-implant interface during wound healing may induce fibrous tissue formation rather than bone contact, leading to clinical failure<sup>19, 20</sup>. However, certain undesirable effects were observed with the 2-stage surgical protocol. These included avoidance of the use of any prosthesis for a minimum of 2 weeks to promote uneventful healing; loose denture, pain, difficulty with chewing during transitional removable prosthesis wearing period<sup>21</sup> and the necessity of additional surgery to expose implant fixtures. These effects presented physiological, psychological, or sociological challenges for patients who underwent dental implants treatment<sup>12,22</sup>.

However, with a better understanding of the biologic principles of bone healing around dental implants, placement in fresh extraction sockets has been attempted and reported to have a high degree of success. Such implants have been described as "immediate implants"<sup>12</sup>. The therapeutic goal of implant dentistry is not only tooth replacement but total oral rehabilitation<sup>1</sup>. Modern technology and design allows predictable placement of dental implants in immediate extraction sites and also permits loading of the implants at the time of placement using a composite temporary bridge. Following osseointegration, the implants are permanently restored with individual crowns<sup>1</sup>.

Lazzara was one of the first surgeons to attempt immediate implant placement. His rationale was better maintenance of alveolar architecture, the use of longer implants and shortened treatment times<sup>24</sup>. Grunder in a multicentre prospective study reported the success rates of implants placed immediately into extraction sites<sup>25</sup>. Gomez-Roman, using a tapered implant system reported a 98.84% five-year success rate with 83 implants placed immediately after extraction<sup>26</sup>. These studies showed impressive results with placement of immediate implants.

However, many factors influence clinical success and longevity of implants and implant restorations. These include patient's medical condition, implant site, type of supra-structure, biomechanical considerations, occlusal loads and oral hygiene maintenance<sup>13</sup>.

Sources of information on dental treatment modalities include dentists, parodontal staff, friends and the electronic media<sup>2,14-18</sup>. Therefore, the knowledge and attitude of dentists to immediate loading implants is important because dentists convey information to patients.

There is little data about the knowledge and attitude of dentists to immediate loading of dental implants. Thus, this study aims to evaluate the knowledge and attitude of dentists on immediate loading of dental implants.

## Materials and Methods

Ethical approval for the study was obtained from the Research Ethics Committee of the Nigerian Dental Association. Pretesting of the questionnaires was carried out on 20 dentists in Lagos University Teaching Hospital (LUTH), Idi-Araba, Lagos. Self-administered questionnaires were distributed during a Nigerian Dental Association conference which had in attendance dentists (public and private practitioners) from all the states of the country. A simple random sampling was used to select participants through a simple balloting of "Yes or No". Only individuals that picked "Yes" were given the questionnaires to fill. The questionnaire was carefully and thoroughly explained to all respondents, they all agreed to participate in the study, informed consent was obtained from them.

A total of 350 questionnaires was distributed but 250 were duly filled and returned. Data derived from the study were analysed using SPSS for Windows version 20. Tables were employed for data presentation and the chi-square test was used to compare knowledge and attitude of respondents. For all comparisons,  $p < 0.05$  was adopted as the criterion for establishing a statistical significance. Data collected were treated as highly confidential. All respondents were assigned code numbers which substituted names as a means of identification. All data generated were transferred to a password protected personal computer and all published articles from the research will not reveal the identity of the respondents.

## Results

This study was carried out among 237 Nigerian dentists. One hundred and fifty six respondents (65.8%) were females while the remaining 81 (34.2%) were males. Most of the respondents (72; 30.8%)

were within 35 - 39 years age bracket with majority (189; 81.8%) having at least 10 years experience. One hundred and twenty three respondents (51.9%) work in private clinics (Table 1).

Table 1: Demographic characteristics of the respondents.

<b>Social Demographic Response</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Sex (n=237)</b>		
Male	81	34.2
Female	156	65.8
<b>Age Group (Years) (n=234)</b>		
25 – 29	36	15.4
30 – 34	60	25.6
35 – 39	72	30.8
> 40	66	28.2
<b>Period of Practice (Years) n = 231</b>		
5 – 10	42	18.2
>10	189	81.8
<b>Location of Practice (n=237)</b>		
Private Clinic	123	51.9
General Hospital	45	19.0
Teaching Hospital	51	21.5
Others FG facilities	18	7.6

One hundred and seventy-four (74.4%) respondents claimed to have heard about immediate loading of dental implants while 75 (33.3%) knew the right time for loading the superstructure with this technique. Surgery related factors and host related factors were listed as factors that influenced decision to perform immediate loading in 54.4% and 79.1% of the respondents respectively (Table 2).

Table 2: Knowledge Assessment of Respondents.

<b>Heard about Immediate loading of dental implants (n = 234)</b>	<b>Frequency</b>	<b>Percent (%)</b>
Yes	174	74.4
No/Not Sure	60	25.6
<b>Immediate loading of dental implants refers to when the provisional or definitive prosthetic construction (super structure) is attached to the implant within 24hrs of the implant placed (n = 225)</b>		
Yes	75	33.3
No/Not Sure	150	66.7
<b>Immediate loading implant refers to when the provisional/definitive prosthetic construction (super structure) is attached to the implant within days/weeks of the implant placed (n = 213)</b>		
Yes	33	15.5
No/Not Sure	180	84.5
<b>Immediate loading refers to when the provisional/ definitive prosthetic construction (super structure) is attached at a second procedure after conventional loading period of 3-6 months. (n = 189)</b>		

	Frequency	Percent (%)
Yes	12	6.3
No/Not Sure	177	93.7
<b>A fundamental requisite for immediate loading is adequate primary implant stability of at least 35Ncm torque. (n = 192)</b>		
Yes	36	18.8
No/Not Sure	156	81.2
<b>Surgery related factors such as primary stability and surgical technique influence the decision to perform immediate loading or dental implants. (n =237)</b>		
Yes	129	54.4
No	108	45.6
<b>Host related factors such as good bone quality and quantity influence the decision to perform immediate loading or dental implants (n =201)</b>		
Yes	159	79.1
No	42	42

Placement of dental implants in the clinic was being performed by 57 (27.9%) respondents and only 15 (12.8%) of these practise immediate loading. Fifty-four (69.2%) of respondents did not completely agree that immediate loading of implants is a suitable alternative to the delayed implant type (Table 3).

Table 3: Knowledge Indicators of Respondents

	Frequency	Percent (%)
<b>Practice of Dental Implants in Clinics (n=204)</b>		
Yes	57	27.9
No	135	66.2
Sometimes	12	5.9
<b>Practice of Immediate loading of dental implants. (n = 117)</b>		
Yes	15	12.8
No	87	74.4
Sometimes	15	12.8
<b>We consider immediate loading suitable alternative to delayed type. (n = 78)</b>		
Yes	24	30.8
No/Not Sure	54	69.2

117 (64.0%) respondents were willing to perform immediate loading implants in aesthetic region in favourable circumstances while 30 (16.4%) stated that they were afraid of the failure of dental implants with the immediate loading technique. One hundred and eighty (85.7%) respondents had not been trained on immediate loading of dental implants while 153(83.6%) respondents were willing to attend training on immediate loading of dental implants (Table 4).

One hundred and seventy-one (89.1%) respondents agreed that immediate loading dental implants required special skills while 80.9% of the respondents

stated that "Immediate loading is not necessary" and 123 (93.2%) opined that "Immediate loading of implant should not be done" (Table 4).

Table 4: Attitude Indicators of Respondents

	Frequency	Percent (%)
<b>Willingness to perform immediate loading in aesthetic region in all favourable conditions. (n = 183)</b>		
Yes	117	64.0
Not yet convinced	24	13.1
Afraid of failure of implants	30	16.4
I'll need constant reviews and follow-ups	9	4.9
Other Reasons	3	1.6
<b>Immediate loading is stressful and technique is sensitive. (n = 201)</b>		
Yes	63	31.3
No/Not Sure	138	68.7
<b>Had previous training on immediate loading of dental implants. (n = 210)</b>		
Yes	30	14.3
No/Not Sure	180	85.7
<b>Willing to attend training on immediate loading. (n = 183)</b>		
Yes	153	83.6
No/Not Sure	30	16.4

	Frequency	Percent (%)
<b>Immediate loading implant requires special skills. (n = 192)</b>		
Yes	171	89.1
No/Not Sure	21	10.9
<b>Immediate loading implant should not be done. (n = 132)</b>		
Yes	9	6.8
No/Not Sure	123	93.2
<b>Immediate loading implant is not necessary. (n = 141)</b>		
Yes	27	19.1
No/Not Sure	114	80.9

There is a statistically significant association between the knowledge of immediate dental implants and the attitude towards it indicating that the attitude is greatly influenced by the knowledge of the procedure. In all, 108 (45.6%) respondents showed a good knowledge of immediate dental implants while 192 (81%) indicated a negative attitude towards it (Tables 5 & 6).

Table 5: Knowledge Score Classification of 237 Respondents

Classification	Frequency	Percent (%)
Poor	66	27.8
Fair	63	26.6
Good	108	45.6
<b>Total</b>	<b>237</b>	<b>100</b>

Table 6: Relationship between Attitude and Knowledge of Immediate Loading of Dental Implants

Variables	Attitude		Statistics	
	Positive	Negative	X <sup>2</sup>	P-value
<b>Poor</b>	45 (19.0%)	192 (81.0%)	20.981	0.000
<b>Fair</b>	24 (38.1%)	39 (61.9%)		
<b>Good</b>	15 (13.9%)	93 (86.1%)		

Discussion

Implant therapy has become an integral part of today's daily dental practice. Appropriate knowledge of diagnostic and therapeutic options with dental implant therapy is therefore mandatory for every dental practitioners<sup>1</sup>. This study showed that knowledge of immediate dental implants is relatively low. Demonstration of "good knowledge" among the respondents contributed to 45.6% of the total number. This is lower than the study done by Lang-Huaet al<sup>2</sup> which showed 80.0% knowledge of immediate dental implant. According to the International Team for Implantology (ITI) Consensus Conference, immediate implant loading has been defined as a restoration placed in occlusion with the opposing dentition within 48 hours of implant placement<sup>3</sup>. In this study, only 33.3% of the respondents agreed to immediate implant loading which shows the relatively low knowledge of immediate dental implants among Nigerian dental practitioners.

Several studies<sup>4-6</sup> have shown that surgery related factors such as direction of bone drilling, implant dimension as it relates to bone drilled will significantly affect whether the implant will be placed immediately or if healing will be allowed to take place i.e. delayed implant placement. From this study, 54.4% of dental practitioners agreed to the fact that these factors will influence the decision to perform immediate loading of dental implants. This further highlights the low knowledge of immediate dental implants. Numerous studies<sup>4,6,7</sup> have also shown the direct effect of poor

host related factors like poor bone quality on the outcome of implant placement generally and on immediate implant placement especially. Our finding was consistent with other studies as 79.1% of dental practitioners were in agreement with this finding.

Also, 74.4% of the respondents do not practise immediate implant placement. This is consistent with the study done by Akeredolu et al<sup>8</sup> that showed that only 1.3% of dental practitioners employed immediate implants for the replacement of missing teeth. Pommer et al<sup>3</sup> reported that when cases are properly selected and the appropriate techniques, materials, and protocols are used, immediate loading of dental implants work as well as delayed<sup>3</sup>. Allison and Dimatteo<sup>29</sup> also showed that the statement that "immediate dental implant does not work or that it is substandard to the delayed type" is a myth. This study showed that 69.2% of respondents were unsure if immediate loading of implants is a suitable alternative to the delayed implant type which contradicts Allison and Dimatteo's study and this also indicated the poor knowledge of immediate dental implants in our environment.

Majority of the respondents stated that they were willing to perform immediate implant loading in aesthetic regions in all favourable conditions. This is consistent with the study done by Akeredolu et al<sup>8</sup> which showed that 89.6% of dental practitioners were willing to practise implantology. A few number of dental practitioners believe that immediate dental implant placement is stressful and technique sensitive. This is in agreement with Krauser et al<sup>3</sup> who stated that general dental practitioners who are experts in all phases of implant placements can provide adequate treatment.

This study also showed that despite the high negative attitude towards immediate loading of dental implants, majority of dental practitioners are willing to attend training on immediate loading of dental implants. This can be explained by the low knowledge of immediate dental implants of respondents as this study shows a significant association between low knowledge of immediate implant loading and negative attitude of respondents.

Conclusion

This study shows that the knowledge of immediate loading of implants among Nigerian dental practitioners is generally low and this directly influences their attitude towards it.

## References

1. Giri D, Kundapur PP, Singh VP. Immediate implants in Dentistry. *Pakistan Oral Dent J* 2006; 33(3):449–454.
2. Kohli S, Bhatia S, Kaur A, Rathakrishnan T. Patients awareness and attitude towards dental implants. *Indian J Dent* 2015;6:167-171.
3. Pommer B, Zechner W, Watzak G, Ulm C, Watzek G, Tepper G. Progress and trends in patients' mindset on dental implants. I: Level of information, sources of information and need for patient information. *Clin Oral Impl Res* 2011;22:223-239.
4. Lindh T, Gunne J, Tillberg A, Molin M. A meta-analysis of implants in partial edentulism. *Clin Oral Impl Res* 1998;9:80-90.
5. Aglietta M, Siciliano VI, Zwahlen M et al. A systematic review of the survival and complication rates of implant supported fixed dental prostheses with cantilever extensions after an observation period of at least 5 years. *Clin Oral Impl Res* 2009;20:441-451.
6. Den Hartog L, Huddleston Slater JJ, Vissink A, Meijer HJ, Raghoobar GM. Treatment outcome of immediate, early and conventional single-tooth implants in the aesthetic zone: A systematic review to survival, bone level, soft tissue, aesthetics and patient satisfaction. *J Clin Periodontol* 2008;35:1073-1086.
7. Sonoyama W, Kuboki T, Okamoto S et al. Quality of life assessment in patients with implant-supported and resin-bonded fixed prosthesis for bounded edentulous spaces. *Clin Oral Impl Res* 2002;13:359-364.
8. Narby B, Kronstrom M, Soderfelt B, Palmqvist S. Changes in attitudes toward desire for implant treatment: A longitudinal study of a middle-aged and older Sweden population. *Int J Prosthodont* 2008;21:481-485.
9. Brunski JB. In vivo bone response to biomechanical loading at the bone/dental implant interface. *Adv Dent Res* 1999;13:99-119.
10. Chowdhary R, Mankani N, Chandraker NK. Awareness of Dental Implants as a Treatment Choice in Urban Indian Populations. *Int J Oral Maxillofac Implants* 2010;25:305-308.
11. Zimmer CM, Zimmer WM, Williams J, Liesener J. Public awareness and acceptance of dental implants. *Int J Oral Maxillofac Implants* 1992;7:228-232.
12. Zygiogiannis K, Wismeijer D, Aartman IH, Osman RB. A systematic review on immediate loading of implants used to support over dentures opposed by conventional prostheses: factors that might influence clinical outcomes. *Int J Oral Maxillofac Implants* 2016;31(1):63-72.
13. Vohra F and Habib R: Attitude of dentists toward implant restorations. *Nig J Clin Prac.* 2014;1:1 – 6.
14. Chowdhary R, Mankani N, Chandraker NK. Awareness of Dental Implants as a Treatment Choice in Urban Indian Populations. *Int J Oral Maxillofac Implants* 2010;25:305-308.
15. Satpathy A, Porwal A, Bhattacharya A, Sahu PK. Patient Awareness, Acceptance and perceived cost of dental implants as a treatment modality for replacement of missing Teeth: A Survey in Bhubaneswar and Cuttack. *Int J Pub Health Dent* 2011;2:1-7.
16. Pommer B, Zechner W, Watzak G, Ulm C, Watzek G, Tepper G. Progress and trends in patients' mindset on dental implants. II: Implant acceptance, patient-perceived costs and patient satisfaction. *Clin Oral Impl Res* 2011;22:106-112.
17. Mukatash GN, Al-Rousan M, Al-Sakarna B. Needs and demands of prosthetic treatment among two groups of individuals. *Indian J Dent Res* 2010;21:564-567.
18. Kumar RC, Pratap KV, Venkateswararao G. Dental implants as an option in replacing missing teeth: A patient awareness survey in Khamman, Andhra Pradesh. *Indian J Dent Sci* 2011;3:33-36.
19. Gapski R, Wang H-L, Mascarenhas P, Lang NP. Critical review of immediate implant loading. *Clin Oral Impl. Res*, 14, 2003; 515–527.
20. Adell, R., Lekholm, U., Rockler, B. & Bra°nemark, P.I. (1981) A 15-year study of osseointegrated implants in the treatment of the edentulous jaw. *International J Oral Surg* 10: 387–416.
21. Schnitman, P.A., Wohrle, P.S., Rubenstein, J.E., DaSilva, J.D. & Wang, N.H. (1997) Tenyear results for Bra°nemark implants immediately loaded with fixed prostheses at implant placement. *International J Oral Maxillofac Implants* 12: 495–503.
22. Salama, H., Rose, L.F., Salama, M. & Betts, N.J. (1995) Immediate loading of bilaterally splinted titanium root-form implants in fixed prosthodontics – a technique reexamined: two



- case reports. *Int J Perio Rest Dent* 2006;15:344-361
23. Branemark PI, Zarb GA, Albrektsson T. Tissue integrated prosthesis; Osseo integration in Clinical dentistry. Chicago, Ill: Quintessence Publishing company;1985:1:11.
  24. Lazzara RJ. Immediate implant placement into extraction sites: Surgical and restorative advantages. *Int J Perio Rest Dent* 1989; 9:333-343.
  25. Grunder U, Pollizzi GA. A 3 year prospective multicentric follow up report on the immediate and delayed immediate placement implants. *Int J Oral Maxillofac Implants* 1999;14:210-216.
  26. Gomez Roman G, Schulte W, d'Hoedt B, Axman Kramer D. The Frialit 2 Implant system: Five year clinical experience in single tooth and immediate post extraction applications. *J Oral Maxillofac implants*.1997;12:299-309.
  27. Busutkar NA. Assessment of knowledge related to implant dentistry in dental practitioners of north Karnataka region, India. *J Dent Implants*. 2013; 3(1): 26-28.
  28. Lang-Hua B, Lang NP, Edward C. M. L, McGrath CPJ. Attitudes of general dental practitioners towards implant dentistry in an environment with widespread provision of implant therapy. *Clinical oral implant research*. 2013; 24(3):278-284.
  29. Allison M, DiMatteo BA. The myths and realities of immediately loaded dental implants. *Inside dental technology*. 2008; 4(8): 584-594.
  30. Schulte W, d'Hoedt B, Jahre Tübinger Implantataus FRIALIT Weitere Ergebnisse., *Z Zahnärztl Implantology, IV*. 1998; 4: 167-173.
  31. Quayle AA, Cawood J, Howell RA, Eldridge DJ, Smith GA. The immediate or delayed replacement of teeth by perimucosal intra-osseous implants: The Tübingenimplant system. *Br Dent J*; Vol 166, 10, 365-370.
  32. Lazzara RJ. Immediate implant placement into extraction sites: Surgical and restorative advantages. *Int J Perio Rest Dent* 1989; 9(5): 333-344.
  33. Schulte W. Klinische und wissenschaftliche Aspekte des Einzelzahnimplantates. *Z Zahnärztl Implantologie, III*, 135-136, 1987.
  34. Akeredolu PA, Adeyemo WL, Gbotolorun OM, James O, Olorunfemi BO, Arotiba GT. Knowledge, attitude, and practice of dental implantology in Nigeria. *J Implant Dent* 2007; 16(1):110-118.